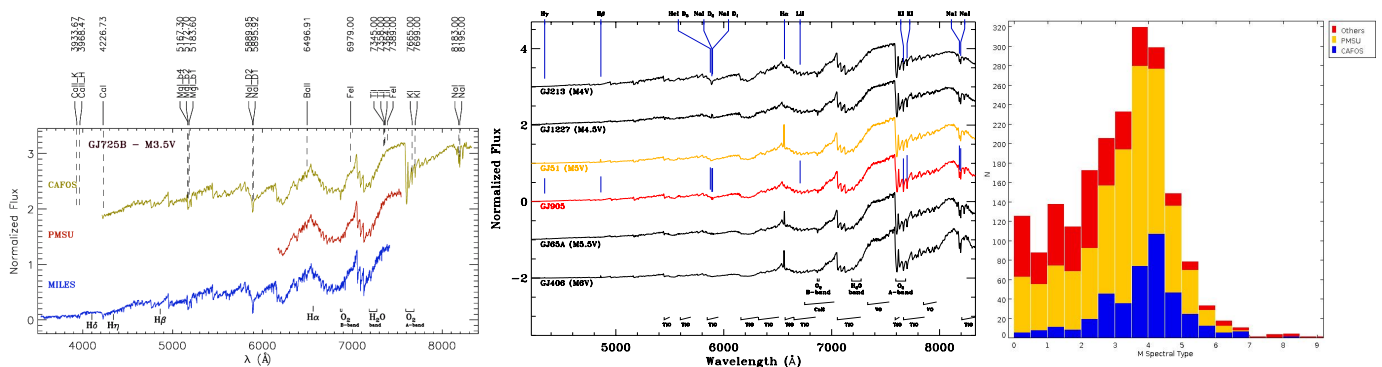


## RIA-AstroMadrid 3. Low-resolution spectroscopy of M dwarfs with CAFOS at Calar Alto

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We conduct long observational campaigns with CAFOS at the 2.2. m Calar Alto telescope to obtain low-resolution ( $R \sim 1500$ ) spectra of poorly-known M dwarfs and candidates that are bright enough to be considered as potential CARMENES targets. We perform a spectral-type classification of the targets by comparing their acquired spectra with those of spectral-type standard stars observed during the same observing runs, and using spectral indices well calibrated for M dwarfs, such as TiO- $n$ , CaH- $n$ , VO- $n$  and PC- $n$ . We also measure chromospheric activity indicators. Up to now, over **700 M** dwarfs have been observed and analysed, many of which had not been spectroscopically investigated yet.



**Top left.** Comparison of wavelength coverage of CAFOS (top), PMSU (middle) and MILES (bottom); we lose H $\delta$  and the Ca H&K doublet at the bluest end, but win the alkali doublet at the reddest end. **Top middle.** Example of a best-spectral-type cross-match with our CAFOS data; for each half subtype, we have defined three reference stars, of which one is a prototype standard star. By comparison with PMSU, our spectra-typing uncertainty is 0.5 subtype. **Top right.** Distribution of stars in CARMENCITA (poster 2) as a function of spectral type and its origin (blue: CAFOS; yellow: PMSU; red: other sources).

**Bottom left.** Four representative spectral index-spectral type diagrams; for each CAFOS spectrum, we derive 28 spectral indices (Kirkpatrick et al. 1991; Reid et al. 1995; Martin & Kun 1996; Martin et al. 1996, 1999; Hawley et al. 2002; Lépine et al. 2003; Slesnick et al. 2006; Shkolnik et al. 2011; Seeliger et al. 2011), which complement our  $\chi^2$  and best-match SpT determinations. **Bottom middle.** Comparison between spectral types measured by us on CAFOS spectra and determined by Lépine & Gaidos (2011) from  $\langle V \rangle - J$  colour. **Bottom right.** H $\alpha$  index as a function of TiO5 index (i.e., spectral type) for our preliminary CAFOS sample.

